

### **REMARKS/ARGUMENTS**

Prior to this Amendment, claims 1-6 and 16-20 were pending in the application. No claim amendments are presented with this Amendment.

#### **Claim Rejections Under 35 U.S.C. §102**

In the June 30, 2006 Office Action, the Examiner maintained the rejection of claims 1-4 under 35 U.S.C. §102(b) as being anticipated by U.S. Pat. Appl. Publ. No. 2002/0050397 ("Sakamoto"). This rejection is traversed based on the following remarks.

In the prior Amendment, it was initially noted that Sakamoto does not teach or discuss alignment of electrical components on a printed circuit board. Instead, Sakamoto discusses a method for better controlling the temperature of a semiconductor module on a flexible sheet of a disk drive. This is a very different problem than that addressed by Applicant, and Sakamoto does not discuss accurate aligning but teaches instead enhanced heat dissipation. To this end, Sakamoto shows in Figures 1A, 1B, 2A, 2B, and 2C a flexible sheet 11 made up of two insulating sheets P1 and P2 between which pad electrodes PD are sandwiched. A first opening OP is cut in the sheet P2 to expose the pads PD and a hole 13 is cut through both sheets P1 and P2. A semiconductor module 10 is mounted on the flexible sheet 11 with a portion contacting the pads PD and a portion extending through the hole 13 to mate with a radiation substrate 13A.

After this initial discussion as to the teaching of Sakamoto, the prior Amendment presented specific elements and claim language of claim 1 that are not shown or even suggested by Sakamoto. However, the Response to Arguments presented on page 2 of the June 30, 2006 Office Action only addresses the introductory or background portion of Applicant's remarks and does not rebut Applicant's specific arguments that several claim limitations are not shown by Sakamoto. Specifically, the Examiner states in his response that "accuracy" is discussed as being important in the background of Sakamoto and then argues that

the Sakamoto structures are "capable of performing the intended use" so the structure meets the claim limitations. However, the prior Amendment made it clear that Sakamoto fails to teach each and every limitation of claim 1. The following remarks restate arguments made in the prior Amendment while further stressing the failings of Sakamoto to teach each and every claim limitation as required under 35 U.S.C. §102. The Examiner is requested to withdraw the rejections based on Sakamoto or to provide a specific rebuttal of each of the following arguments.

As discussed in the prior Amendment, claim 1 calls for "component-dedicated alignment indicators" disposed on the mounting surface of a circuit board body. Sakamoto fails to teach any "indicators visibly disposed at the mounting surface" as called for in claim 1. The Office Action cites Sakamoto in Fig. 1 and its "circuit board 11" as showing these indicators for use with component 10. However, as seen in Figures 1A, 1B and 2A, Sakamoto teaches a flexible sheet 11 that includes no visible indicators on its surface for aligning component 10. Instead, Sakamoto teaches that an opening OP is cut through its insulating sheet P2 and another opening 13 is cut through another insulating sheet P1. There are no alignment lines provided on the surface of sheet P2 but instead in Figure 1A it is shown that the component 10 is mounted to the surface of sheet P2 exterior to opening OP (e.g., see dashed lines indicating where component 10 would be mounted on the surface of sheet P2). As can be seen clearly in Figure 1A, there are no visible alignment line indicators provided on flexible sheet 11. For this additional reason, claim 1 is believed allowable over Sakamoto.

The Response to Arguments provides no response to this argument, and the final Office Action of June 30, 2006 simply restates the prior rejection of claim 1. Looking again at this rejection, the Office Action presents a Fig. 1 and a Fig. 2 that correspond to Sakamoto's Figures 2A and 2C, respectively. Fig. 1 of the Office Action is used to assert that the first and second outer line segments are shown by the edges of the flexible sheet 11. However, these are physical edges of the board

and are not “visibly disposed at the mounting surface.” Fig. 1 of the Office Action provides a solid line that is used to show the measurements of first and second inner spacings. However, this line is shown dashed in Fig. 2A of Sakamoto as it represents the hidden outer sides or edges of component 13A, which according to para. [0123] of Sakamoto is a radiation substrate. This radiation substrate 13A is mounted on the flexible sheet 11 on the opposite side of the flexible sheet 11 relative to semiconductor device 10. Hence, the solid line shown in the Office Action's Fig. 1 is not actually present as a visibly disposed line on a mounting surface of sheet 11, and as a result, the indicator lines of claim 1 are not shown in the Office Action's Fig. 1 or in Sakamoto's Fig. 2A.

Fig. 2 of the Office Action points to layer P2 of Sakamoto and to the edge of device 10 as showing the “Component-dedicated alignment line indicator.” These cited features are different than the solid line shown in Fig. 1 of the Office Action, but these features also fail to show “visibly disposed” line indicators “at the mounting surface” as called for in claim 1. Specifically, the side of the device 10 itself is not on the mounting surface (until the device is mounted) and would not assist in alignment without additional visibly disposed indicators. The layer P2 also fails to show the visibly disposed line indicators. Fig. 1A of Sakamoto shows that layer P2 of sheet 11 provides the mounting surface for the device 10, and this can be seen by dashed lines that show that the corners of device 10 rest on the layer P2 with the recessed surface OP below it (such mating of device 10 and the upper surface of layer P2 is further shown in Sakamoto in Fig. 2B). As can be seen, layer P2 provides the mounting surface, but, as shown in Fig. 1A of Sakamoto, there are no visibly disposed line indicators, and the edge of OP cannot reasonably be said to be a line indicator visibly disposed on the mounting surface of layer P2. The only alignment shown by Sakamoto is that the device 10 should be mounted with its corners outside the OP on an upper or mounting surface of layer P2, but such alignment is not achieved with the assistance of any visibly disposed line indicators

at the surface of sheet 11. For these additional reasons, Sakamoto fails to teach or suggest the disk drive printed circuit board of claim 1.

In addition to the requirement that the line indicators be visibly disposed on the mounting surface, claim 1 calls for first, second, third, and fourth line segments in the line indicators on the mounting surface of the board, with the distance between opposing pairs of the lines being based on the electrical component. These four lines are not shown on the surface of 11 (i.e., on either the sheet P1 or sheet P2). The Office Action provides a "Fig. 1" that is a marked up version of Sakamoto's Figure 2A. As discussed in the prior Amendment, Applicant disagrees with the Office Action's construction of Sakamoto's Figure 2A provided in the Office Action's Fig. 1. Specifically, the Office Action's Fig. 1 is labeled such that apparently the four inner lines are shown by a rectangle that has "first inner spacing" and "second inner line spacing." However, as discussed above, it appears that this rectangle coincides with the dashed lines in Sakamoto's Figure 2A that show the radiation substrate 13A. The radiation substrate 13A is shown in dashed lines in Figure 2A because it is hidden from view and is not provided on the surface of flexible sheet 11. There are no lines "visibly disposed" on the mounting surface of flexible sheet 11 that can be said to teach the four inner line segments called for in claim 1. For this additional reason, Sakamoto fails to anticipate the printed circuit board of claim 1. The Response to Arguments failed to rebut this argument, and Applicant requests that the rejection be withdrawn as unsupported or that the Examiner indicate specifically where in Sakamoto's figures (without additions or modifications) the four inner line segments are shown or described.

Further, in claim 1, a disk drive printed circuit board is claimed that includes a board body and a mounting surface disposed on the board body. As pointed out in the prior Amendment, Sakamoto teaches mounting on a flexible sheet 11 and not a board body of a printed circuit board (e.g., the Office Action does not assert that alignment line indicators are shown on the printed circuit board 112 of Figure 25 but

instead on flexible sheet 11 of Figure 1A). For this reason alone, claim 1 is not anticipated by Sakamoto, and the rejection should be withdrawn. The Response to Arguments fails to address this deficiency of Sakamoto or to address this argument.

Claims 2-4 depend from claim 1 and are believed allowable over Sakamoto at least for the reasons provided for allowing claim 1. Further, claim 3 calls for the line indicators to include a third outer line segment. The Office Action indicates that this third line segment is shown by another physical edge of the flexible sheet 11. As discussed above, a visibly disposed line segment is not shown by an edge for at least the reason that an edge of a surface or sheet is not on the mounting surface of the sheet. In other words, there would be no reason to provide visible line indicators if acceptable and practical alignment could be achieved by using the edges of the circuit board. For this additional reason, claim 3 is not anticipated by Sakamoto.

#### **Claim Rejections Under 35 U.S.C. §103**

Additionally, in the June 30, 2006 Office Action, the Examiner maintained the rejection of claims 5 and 6 under 35 U.S.C. §103(a) as being unpatentable over Sakamoto in view of U.S. Pat. No. 6,798,609 ("Bonin"). Claims 16-20, which were added in the prior Amendment, were similarly rejected as being unpatentable over Sakamoto in view of Bonin. These rejections are traversed based on the following remarks.

Independent claim 16 includes limitations similar to claim 1, and the reasons provided for allowing claim 1 over Sakamoto are believed equally applicable to claim 16. As discussed below with reference to claims 5 and 6, Bonin fails to overcome the deficiencies of Sakamoto discussed with reference to claim 1. Claim 16 also calls for the inner line segments disposed upon the mounting surface to define a rectangle at least as large as the base of the electrical component. The Office Action cites Fig. 1 provided in the Office Action, but as discussed above, the only rectangle cited is the outline of component 13A which is not on the mounting

surface of sheet 11, and as a result cannot be said to show the four inner line segments of claim 16. For these reasons, claim 16 and claims 17-20, which depend from claim 16, are not shown or suggested by the combined teaching of the two cited references.

Claims 5 and 6 depend from claim 1 and, as a result, the reasons provided for allowing claim 1 over Sakamoto apply equally to claims 5 and 6. In the Office Action, Sakamoto is described as failing to show the component-dedicated alignment line indicators that include fourth outer line segments with the characteristics called for in claims 5 and 6, and Bonin is cited as overcoming these deficiencies in the base reference. However, Bonin fails to overcome the deficiencies of Sakamoto discussed with reference to claims 1 and 3 above.

Specifically, Bonin fails to show any visibly disposed indicator lines on its mounting surfaces. The Office Action cites Bonin with reference to Figure 3 and the beams 33 and 35, but there is no discussion in Bonin regarding providing four inner indicator lines having a particular spacing and then providing two outer line segments. Hence, the combined teaching of Sakamoto and Bonin would not provide the circuit board of claim 1. Claim 5 calls for third and fourth outer line segments and neither Sakamoto nor Bonin provide such teaching. The Examiner at the middle of page 7 asserts that such teaching is provided by "any lines close to a disk drive electrical components" such as beams 33 and 35. However, there is no teaching these are provided as alignment indicators or that they would be useful for such a purpose but are instead described as being deformable connectors for connecting inner frame 40 to outer frame 38 in lines 59-67 of col. 2. The beams 33 and 35 fail to teach the third and fourth indicator lines of claims 5 and 6 (and where would be the first and second indicator lines be in Bonin?). The Response to Arguments provided in the June 30, 2006 Office Action fails to address these arguments distinguishing Bonin from claims 5 and 6. For these reasons, Sakamoto in view of Bonin fails to teach or suggest the boards of claims 5 and 6.

**Conclusions**

In view of all of the above, Applicant respectfully requests that the claim rejections be withdrawn in this case.

No fee is believed due for this submittal. However, any fee deficiency associated with this submittal may be charged to Deposit Account No. 50-1123.

Respectfully submitted,

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